

Serial No. 10/698,040 filed October 30, 2003  
Response dated October 29, 2008  
to Office Action of April 29, 2008

### **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### Listing of Claims

1. (Previously Presented) A machine comprising:

a computing device for determining implied volatility in options pricing, wherein said device determines the implied volatility by division of the period until option expiration into subperiods and possible underlying asset price values, and by calculation of a node vega, said node vega being the exact derivative of the option price with respect to the volatility at the end of at least one of said subperiods and at one or more of said underlying asset price values.

2. (Previously Presented) A machine as claimed in claim 1, wherein said node vega is calculated at the end of a plurality of said subperiods.
3. (Previously Presented) A machine as claimed in claim 1, wherein said machine calculates implied volatility for American options.
4. (Previously Presented) A machine as claimed in claim 1, wherein said calculation is conducted using a Cox-Ross-Rubinstein (CRR) binomial tree.

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5. (Previously Presented) A machine comprising:

a computing device for determining implied volatility in options pricing, wherein said device determines the implied volatility by division of the period until option expiration into subperiods, and calculation of a node vega, said node vega being the exact derivative of the option price with respect to the volatility in at least one of said subperiods, said node vega being calculated using the following equation:

$$V_i = \left( \frac{1}{R} \right) \times \left[ p V_{i+1}^{up} + (1-p) V_{i+1}^{down} + \left( C_{i+1}^{up} - C_{i+1}^{down} \right) \frac{\partial p}{\partial \sigma} \right]$$

6. (Previously Presented) A machine as claimed in claim 5, wherein said node vega is calculated at the end of a plurality of said subperiods.
7. (Previously Presented) A machine as claimed in claim 5, wherein said machine calculates implied volatility for American options.
8. (Previously Presented) A machine as claimed in claim 5, wherein said calculation is conducted using a Cox-Ross-Rubinstein (CRR) binomial tree.
9. (New) A machine as claimed in claim 5, wherein said node vega is calculated at the beginning of a plurality of said subperiods.